

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER NO. 96-113

WASTE DISCHARGE REQUIREMENTS
AND RECISSION OF ORDER NO. 92-029 FOR:

U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT
HAMILTON AIR FORCE BASE, LANDFILL 26
NOVATO, MARIN COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (herein called the Board) finds that:

1. The U. S. Army Corps of Engineers (USACE), Sacramento District (hereinafter the discharger) has been designated by the Department of Defense to perform necessary investigations and take appropriate remedial action relative to Landfill 26 on the Hamilton Air Force Base.
2. Hamilton Air Force Base (HAFB) is located east of Highway 101 in Marin County, near the town Novato and Ignacio reservoir (Figure 1). The facility opened in 1934 as an Army Air Corps facility to train fighter and bomber pilots. The field was transferred in 1947 to the U. S. Air Force from the Army. The Base was used for pilot training, submarine surveillance and aircraft maintenance.
3. HAFB was listed in 1974 as excess property. Base Command was transferred from military command to civilian managers. The Department of Defense withdrew the housing area portion of the base from the excess property listing and transferred that portion to the U.S. Navy. The Army received permission in 1976 from the USAF to use the runway and other ancillary facilities for aircraft operation. Also in 1976 the State of California determined that lands subject to tidal action belong to the State. Consequently a portion of the land outside the levees that encircle the site were claimed by the State.
4. This order addresses Landfill 26 located on HAFB (Figure 2). The landfill encompasses an area of approximately 29 acres. The landfill is one element of concern at HAFB. Other sites at HAFB of water quality concern have been studied by the USACE and reported in separate Remedial Investigations (RI).

Landfill Characteristics

5. The landfill consists of numerous individual discharges of solid waste, which may include both hazardous and non-hazardous substances, dispersed over an extended period

of time over a large area, designated as Landfill 26. The Landfill is located within a topographically low area of a pre-existing surface drainage channel. Investigations on the landfill show that maximum thickness of the wastes is 11 feet and waste is absent at some locations within the landfill boundary. Groundwater saturates some of the wastes, which may result in contamination of circulating ground water.

6. Landfill 26 stopped receiving wastes in the mid 1970s, however, the Landfill was not properly closed at that time.
7. Chemical contaminants identified in soil borings consist of volatile and semi-volatile organics, pesticides and PCBs, petroleum hydrocarbons and heavy metals. Groundwater samples from within the landfill boundary showed the presence of total petroleum hydrocarbons, chlorobenzenes, polynuclear aromatic hydrocarbons and elevated levels of heavy metals.

Legal Basis

8. The work to be performed is mandated under the authority of the Defense Environmental Restoration Program, Title 10 United States Code Section 2701 et seq., and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Title 42, United States Code Section 9601, et. seq., the Superfund Law. Executive Order # 12580 designates the Department of Defense (DOD) as lead agency for implementation of CERCLA regulations on property under DOD control. CERCLA requires that a final Record of Decision (ROD) be issued after public review and comment. CERCLA permits significant, but not fundamental changes to be made to the remedial action plan through issuance of an Explanation of Significant Difference (ESD)
9. Further, the closure will be compliant with California Code of Regulations, Title 23, Chapter 15: Discharge of Wastes to Land.

History

10. The original preferred alternative (ROD dated August 11, 1989) was chemical fixation of hot spots within the landfill and covering the landfill with a low permeability cap. A revised alternative (ESD dated May 10, 1991), proposed elimination of the chemical fixation, with more stringent design specifications for the cap. The capping of the landfill together with groundwater extraction were considered by the discharger to provide an equivalent level of environmental protection compared to that provided by the original plan.

11. The Board issued Order No. 92-029 in March 1992, that required the discharger to implement the revised alternative that included closure of the landfill, installation of a low permeability cap and hydraulic containment. On-going groundwater monitoring was required by the Order to evaluate and monitor the effectiveness of the above remedial action.
12. This Order rescinds Order No. 92-029. This Order reflects the current status of remedial actions at Landfill 26 and requires additional reports based on data collected subsequent to Order No. 92-029. The Specifications of Order No. 92-029 are being met and remain in place in the current Order. The following Provisions of Order No. 92-029 have been completed: Provisions 1-6, 9, 12, and 14-22. Provisions 7, 8, 10, 11 and 13 have not yet been completed and will remain in place in the current Order.
13. The Board issued Resolution 93-082 in 1993 recommending water quality certification for wetland fill during the construction of the Landfill 26 cap and subsequent mitigation for that fill. The mitigation wetland has been constructed and data is being collected to evaluate whether adequate wetland functions have been established. This order includes a provision that requires a report to document the implementation of the approved wetland mitigation plan
14. On September 13, 1995, the Discharger was issued a National Pollutant Discharge Elimination System (NPDES) permit number 95-188 for the discharge of treated ground water to a stormwater drainage system that discharges to San Pablo Bay.

Status of Remedial Actions

15. A composite cover has been constructed over the landfill, consisting of a low permeability compacted soil layer and a flexible membrane liner. Ground water extraction wells and a ground water treatment plant were constructed. Quarterly ground water has been conducted from September 1993 through December 1995.
16. Results of current groundwater monitoring, and evaluation of all geologic, hydrologic and water quality data for the landfill and surrounding areas indicate that hydraulic containment may not be warranted at this time. This Order will require additional evaluation to determine if a modification of the proposed remedy is appropriate. If a change in the remedy is warranted, a ROD amendment shall also be required.
17. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This Order implements the water quality objectives stated in the Basin Plan.

18. The existing and potential beneficial uses of San Pablo Bay in the vicinity of the site are:
 - a. Industrial service supply
 - b. Navigation
 - c. Commercial and sport fishing
 - d. Contact and non-contact water recreation
 - e. Wildlife and estuarine habitat
 - f. Fish migration and spawning
 - g. Preservation of rare and endangered species
19. The existing and potential beneficial uses of groundwater in the vicinity of the site are:
 - a. Industrial service supply
 - b. Domestic Water Supply
 - c. Surface Water Supply
20. The action to issue Waste Discharge Requirements is an action by a regulatory agency to protect the environment and as such is exempt from the California Environmental Quality Act (Public Resources Section 2100 et. seq.) in accordance with Section 15308, Chapter 3, Title 14 of the California Code of Regulations.
21. The Board notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
22. The Board in a public hearing heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that the U.S. Army Corps of Engineers, its agents, successors and assigns in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The treatment, discharge or storage of wastes or materials shall not be allowed to create a condition of pollution or nuisance as defined in Sections 13050 (1) (m), of the California Water Code.
2. Migration of pollutants through subsurface transport to waters of the State is prohibited.

3. There shall be no discharge of wastes to surface waters except as permitted under the National Pollutant Discharge Elimination System (NPDES).
4. Any future uses of the landfill area that would compromise the integrity the landfill cover are prohibited.

B. Specifications

Unless otherwise noted, any references to Sections and Articles refer to Chapter 15, Title 23, of the California Code of Regulations.

The following Specifications apply as set forth in the Provisions:

1. General Specifications

- a. During waste disposal, handling, or treatment, no wastes shall be placed in a position where they can be carried into the waters of the State.
- b. The waste management unit shall prevent migration of wastes to adjacent geologic materials, groundwater, or surface water, throughout the closure and post closure periods.
- c. The integrity of containment structures shall be maintained at all times.
- d. The landfill cover must have a slope of no less than 3 percent to permit run-off.
- e. A drainage ditch surrounding the landfill cover must be installed to carry off precipitation draining from the cover.
- f. A 40 mil flexible liner must be installed beneath the topsoil layer of the landfill cover.
- g. The landfill shall be protected from inundation or washout that would result in mobilization of contaminants due to floods with a 100 year return period.
- h. The landfill cover shall meet the design criteria specified in Section 2581.
- i. Drainage around landfill 26 shall be managed to minimize infiltration and water flow into the landfill.

2. Groundwater Sampling and Monitoring Specifications

- a. The groundwater monitoring program shall be in compliance with Section 2550, and as approved by the Executive Officer.
- b. The discharger shall conduct monitoring activities in accordance with the Monitoring and Reporting Program issued by the Executive Officer to monitor groundwater depth, gradient and quality, and to determine the extent of contamination of the upper unconfined aquifer and deeper zones if contamination is found in the upper aquifer.
- c. The discharger shall monitor groundwater to determine if groundwater contamination has occurred outside the periphery of the landfill according to the statistical tests specified in Chapter 15. In addition groundwater monitoring must be carried out within the landfill. All migration pathways must be monitored.
- d. The groundwater sampling and analysis program shall ensure that groundwater quality data are representative of the groundwater in the area of the waste management unit.
- e. Water quality protection standards will be established by the Board according to Section 2550.2. These standards shall be generated upon submittal of an approved groundwater quality monitoring program and based upon one year of background groundwater quality monitoring data.
- f. An evaluation monitoring program, as required in Section 2550.9, shall be implemented where water quality impairment has occurred, or upon determination that a statistically significant increase in indicator parameters or waste constituents has occurred during detection monitoring.

3. Remedy Evaluation and Technical Reporting

- a. The discharger will analyze all available geologic, hydrologic, soil chemistry and water quality data for landfill 26 to evaluate appropriate remedial actions for groundwater. A technical report shall be prepared to summarize findings and present a proposed remedy. An outline for the report is included as Attachment 1.
- b. The discharger shall maintain the groundwater extraction well system and groundwater treatment plant so that they can be operated as needed, to provide hydraulic containment or groundwater treatment.

C. Provisions

Unless otherwise noted, any references to Sections and Articles refer to Title 23, Chapter 15 of the California Code of Regulations.

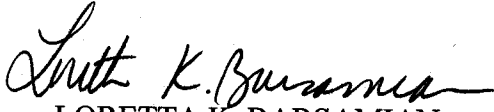
1. The discharger shall comply with Prohibitions A.1 through A.3 immediately upon adoption of this Order.
2. Submit an AMENDMENT TO THE GROUNDWATER MONITORING PROGRAM, acceptable to the Executive Officer, no later than 60 days after this order is adopted. The program shall furnish detailed descriptions of field procedures and analytical methods, locations of monitoring points, and sampling frequencies to be used for ongoing groundwater monitoring. The groundwater monitoring program shall ensure that any release to groundwater will be detected at the landfill point of compliance.
3. Submit a TECHNICAL REPORT proposing the final design of the closed landfill and evaluating the need for hydraulic containment, based on the post-capping water levels, landfill leachate characteristics and hydrology. The technical report should include evaluation of all geologic, hydrologic and water quality data associated with Landfill 26. Specifically the report should evaluate whether the landfill has leaked based on Chapter 15 criteria and include proposals for any needed corrective actions. The report shall be acceptable to the Executive Officer and due no later than 120 days after this order is adopted.
4. If the technical report, submitted as required by Provision 2, documents that some of the sources of groundwater contamination at Landfill 26 are due to sources outside the landfill boundaries, then these sources may be characterized separately from the Landfill 26 closure work. In that case, the discharger shall submit a technical report, acceptable to the Executive Officer, that includes a schedule for site characterization and remedial actions for these sources. The report is due within 60 days after the approval of the technical report in Provision 2.

5. Submit a CLOSURE CERTIFICATION REPORT documenting the completion of work required under Board Order No. 92-029. The report shall be acceptable to the Executive Officer and due no later than 90 days after this order is adopted. (Formerly Provision 11 of Board Order No. 92-029). This report should include:
 - a. Documentation of the implementation of the flood control plan. (Formerly Provision 7 of Board Order 92-029).
 - b. Documentation of the implementation of the approved wetland mitigation plan. (Formerly Provision 8 of Board Order 92-029).
6. Submit a DRAFT AMENDED RECORD OF DECISION for Landfill 26 no later than 180 days after this order is adopted.
7. Submit a DESIGN REVISION REPORT within 180 days of the startup of the groundwater treatment plant, if modification of the treatment processes or capacity expansion is needed based on treatment plant operating data collected. (Formerly Provision 10 of Board Order 92-029)
8. Submit a TECHNICAL REPORT, within 6 months after hydraulic containment system start-up, evaluating the effectiveness of the system. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zones of the extraction wells, establishment of the cones of depression by field measurements, volume of water to be extracted and chemical monitoring data. (Formerly Provision 13 of Board Order 92-029)
9. In the event that the U.S. Army Corps of Engineers chooses to pursue a more stringent closure alternative, the Board will consider amending this Order and modify the time schedule of the Order for implementation.
10. Monitoring reports shall be submitted to the Board on the 15th of the second month following the annual monitoring event. The reports shall include:
 - a) a summary of work performed since the previous report;
 - b) a presentation of updated piezometric surface and water table maps for all affected water bearing zones;
 - c) plan view maps showing the location of all monitoring wells and/or piezometers, at a scalable size.
 - d) Groundwater analytical data
11. All samples shall be analyzed by State certified laboratories using appropriate EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

12. Copies of all correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications and Provisions of this Order shall be provided to the following agencies:
 - a. Department Toxic Substances Control
 - b. Integrated Waste Management Board
13. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267 of the California Water Code:
 - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.
14. The discharger shall file with the Regional Board a report of any material change in the character, location, or quantity of waste discharge. For the purpose of these requirements, this includes any proposed change in boundaries, contours or ownership.
15. The discharger shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.
16. The Board considers the property owner and site operator to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of this Waste Discharge Order.

17. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under federal, state or local laws, and do not authorize discharge of waste without the appropriate federal, state or local permits, authorizations, or determinations.
18. Board Order No. 92-029 is hereby rescinded.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 21, 1996

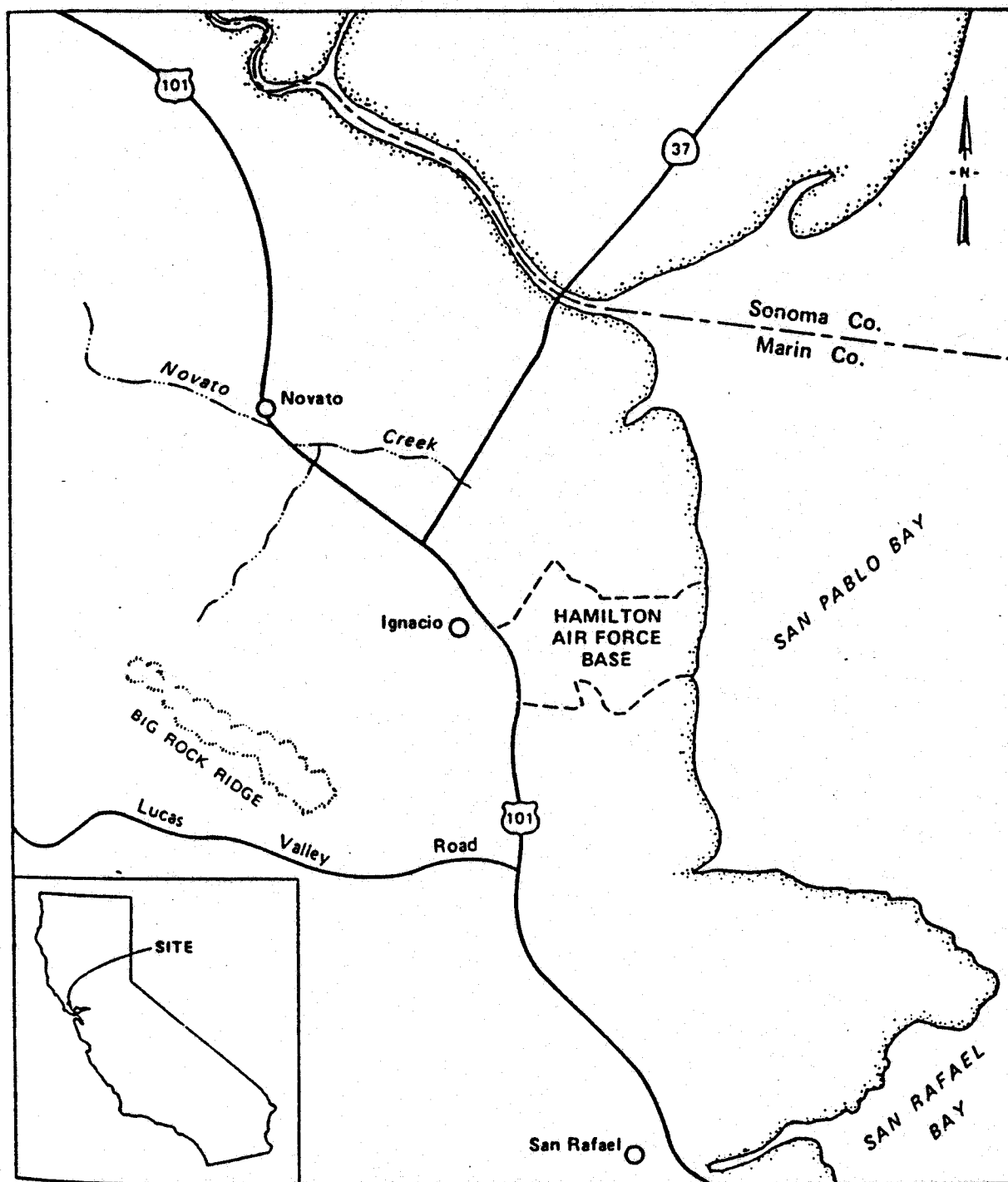

LORETTA K. BARSAMIAN
Executive Officer

Attachments:

Figure 1: Location Map

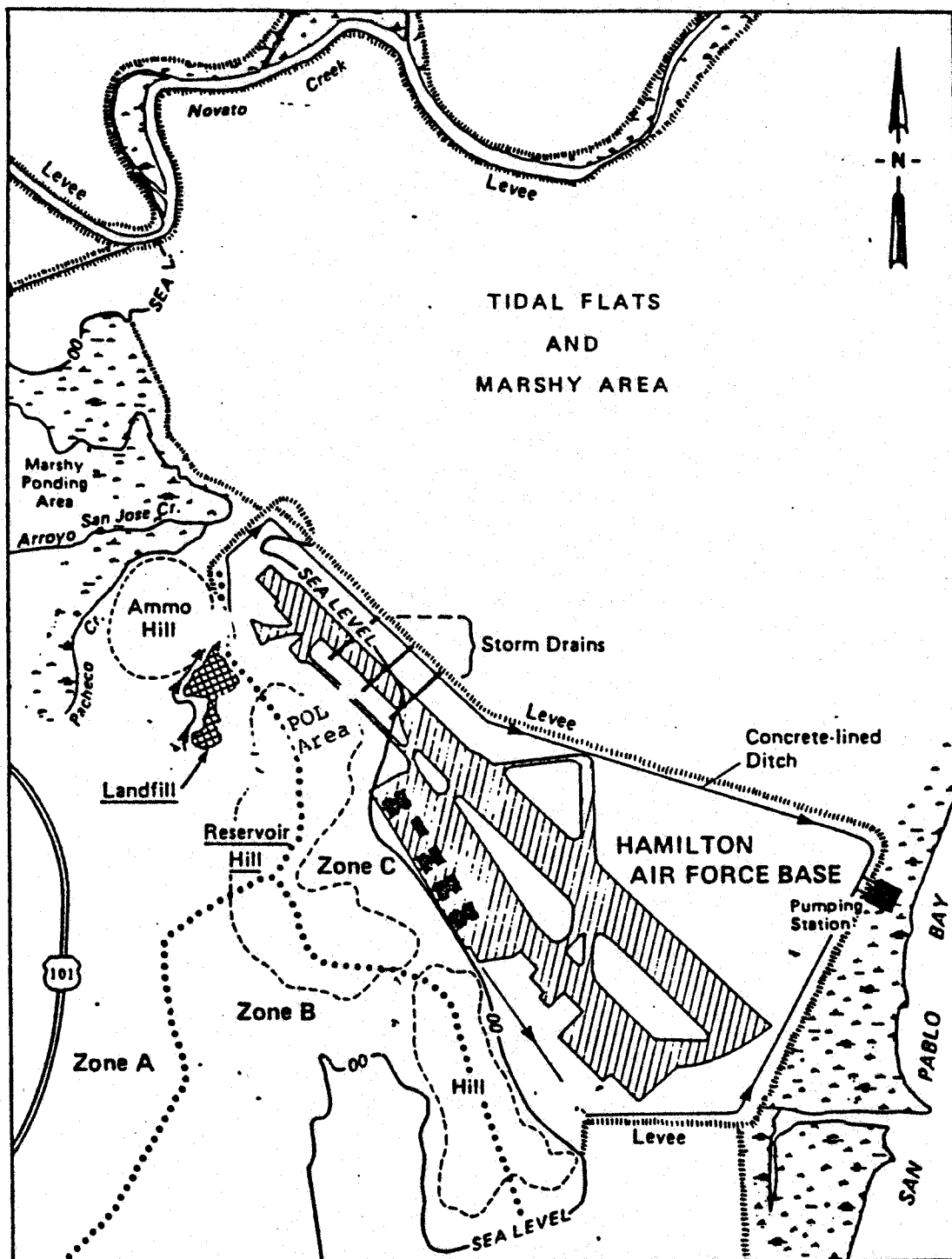
Figure 2: Site Map

Attachment 1 Self Monitoring Program



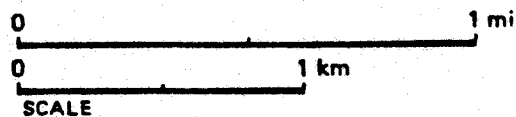
No Scale

Project No. BSC8777D	Hamilton AFB	INDEX MAP TO GENERAL AREA OF STUDY	Figure -1
Woodward-Clyde Consultants			



EXPLANATION

- Watershed divide
- ===== Levee and dikes



Woodward-Clyde Consultants	Hamilton AFB	Generalized Hydrogeologic Map of HAFB with Emphasis on the Landfill	Figure 2
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